

APPENDIX D

**Estimated Whole Body Concentrations from
Largescale Suckers**

APPENDIX D

Estimated Whole Body Concentrations from Largescale Suckers

This appendix contains the following tables:

D-1 Estimated Whole Body Results of TAL Metals, Mercury, and Arsenic Speciation for Individual Largescale Sucker Samples from FSCA 1

D-2 Estimated Whole Body Results of TAL Metals, Mercury, and Arsenic Speciation for Individual Largescale Sucker Samples from FSCA 3

D-3 Estimated Whole Body Results of TAL Metals, Mercury, and Arsenic Speciation for Individual Largescale Sucker Samples from FSCA 6

TABLE D-1

Estimated Whole Body Results of TAL Metals,
Mercury, and Arsenic Speciation for Individual
Largescale Sucker Samples from FSCA 1

Upper Columbia River RI/FS

Analyte	Units	LS1G*1004 0 Primary Sample	LS1W10040 ^b Primary Sample	LS1EW*10040 Associated with Gut/ Contents Primary Sample	LS1G10041 Primary Sample	LS1W10041 Primary Sample	LS1EW10041 Associated with Gut/ Contents Primary Sample	LS1G10051 Primary Sample	LS1W10051 Primary Sample	LS1EW10051 Associated with Gut/ Contents Primary Sample	LS1G10056 Primary Sample	LS1W10056 Primary Sample	LS1EW10056 Associated with Gut/ Contents Primary Sample	LS1G10089 Primary Sample
TAL Metals														
Aluminum	mg/Kg WW	2862.5	20.271 J	231.978	91.9%	1869.48	7.124 J	150.082	95.6%	744.12	112.728 J	137.782	21.4%	1410.5
Antimony	mg/Kg WW	1.9007	0.1131 U	0.246	57.5%	1.053	0.10686 U	0.179	45.0%	1.5444	0.1056 U	0.163	37.7%	1.281
Arsenic	mg/Kg WW	2.37702	0.1479	0.314	56.4%	1.6848	0.20002	0.314	41.2%	1.10916	0.12408	0.163	27.0%	1.4875
Barium	mg/Kg WW	241.824	2.639	20.455	88.1%	118.908	1.7399	10.734	85.0%	44.928	3.1944	4.850	36.8%	67.2
Beryllium	mg/Kg WW	0.13282	0.0058 U	0.015	64.8%	0.081	0.00548 U	0.011	55.1%	0.03861	0.00528 U	0.007	23.2%	0.0665
Cadmium	mg/Kg WW	1.603	0.2726	0.372	32.1%	2.1384	0.411	0.544	30.2%	2.26395	0.3432	0.419	21.4%	1.624
Calcium	mg/Kg WW	7740.2	9657	9514.225	6.1%	6350.4	8905	8708.904	5.6%	8985.6	13992	13793.341	2.6%	5355
Chromium	mg/Kg WW	54.044 J	0.638 J	4.616	87.2%	99.144 J	0.6576 J	8.218	92.6%	53.703 J	0.7524 J	2.854	74.7%	37.8 J
Cobalt	mg/Kg WW	8.7478	0.0522	0.700	93.1%	4.9896	0.03562	0.416	92.1%	1.9305	0.05808	0.132	57.9%	2.506
Copper	mg/Kg WW	306.86	1.8821 J	24.599	92.9%	163.62	0.92064 J	13.410	93.7%	70.551	1.18008 J	3.933	71.2%	82.6
Iron	mg/Kg WW	25006.8	138.91	1991.224	93.5%	14061.6	29.592	1106.719	97.5%	4984.2	69.96	264.962	74.6%	7770
Lead	mg/Kg WW	34.6706	5.017 J	7.226	35.7%	21.7404	7.261 J	8.372	19.9%	11.583	13.4904 J	13.415	3.4%	14.385
Magnesium	mg/Kg WW	1199.96	356.7	419.511	21.3%	884.52	331.54	373.988	18.2%	498.42	411.84	415.276	4.8%	854
Manganese	mg/Kg WW	503.8	8.729	45.605	82.3%	284.148	12.056	32.942	66.2%	100.386	15.3912	18.764	21.2%	166.25
Nickel	mg/Kg WW	19.6482	0.29	1.732	84.5%	64.152	0.3014	5.203	94.7%	32.994	0.4224	1.715	76.3%	20.16
Potassium	mg/Kg WW	2725.1	3480	3423.770	5.9%	2527.2	3205.8	3153.709	6.2%	2804.49	3352.8	3331.042	3.3%	2789.5
Selenium	mg/Kg WW	1.0992	0.551	0.592	13.8%	0.80676	0.5206	0.543	11.4%	1.04598	0.68112	0.696	6.0%	0.84
Silver	mg/Kg WW	0.5954	0.0725 U	0.111	39.8%	0.6804	0.0685 U	0.115	45.2%	0.29133	0.066 U	0.075	15.4%	0.1715
Sodium	mg/Kg WW	1309.88	1020.8	1042.332	9.4%	1500.12	1120.66	1149.788	10.0%	1449.63	1393.92	1396.131	4.1%	1585.5
Thallium	mg/Kg WW	0.10992	0.0725 U	0.075	10.9%	0.081	0.0685 U	0.069	9.0%	0.08424	0.066 U	0.067	5.0%	0.084
Uranium	mg/Kg WW	0.65952	0.01491	0.063	78.1%	0.3888	0.0274	0.055	54.1%	0.20147	0.02957	0.036	22.0%	0.30625
Vanadium	mg/Kg WW	6.9158	0.1131 U	0.620	83.1%	5.2812	0.10686 U	0.504	80.4%	2.79747	0.1056 U	0.212	52.3%	4.515
Zinc	mg/Kg WW	1951.08	40.31 J	182.636	79.6%	1036.8	50.69 J	126.386	63.0%	331.344	54.648 J	65.628	20.0%	462
Mercury														
Mercury	ug/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic Species														
Arsenic (As*3 + As*5)	µg/Kg WW	-	-	-	-	187.272	11.234 UJ	24.74704912	58.1%	118.287	10.824 UJ	15.08824283	31.1%	-
ASB + Cation	µg/Kg WW	-	-	-	-	13.284 UJ	16.714 JL	16.45070595	6.2%	14.391 UJ	7.656 JL	7.923251756	7.2%	-
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	-	-	26.244 J	13.7 JL	14.66290396	13.7%	17.901 J	10.824 UJ	11.10482267	6.4%	-
Monomethylarsonic acid (MMA)	µg/Kg WW	-	-	-	-	13.284 U	11.234 UJ	11.39136233	9.0%	14.391 U	10.824 UJ	10.96554224	5.2%	-
Unknown	µg/Kg WW	-	-	-	-	27.54 J	11.234 JL	12.48568304	16.9%	15.444 J	10.824 UJ	11.00732637	5.6%	-
Conventional														
Lipids	%	-	6.9	NC	NC	-	5.6	NC	NC	-	2.9	NC	NC	-
Moisture	%	54.2	71	NC	NC	67.6	72.6	NC	NC	65	73.6	NC	NC	65
U - The analyte was not detected at or above the reported value.														
J - The identification of the analyte is acceptable; the reported value is an estimate.														
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^a G indicates a gut/contents sample from an individual largescale sucker.

^b W followed by a 5-digit numeric code indicates a whole body sample with the gut/contents removed form an individual largescale sucker.

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TABLE D-1

Estimated Whole Body Results of TAL Metals,
Mercury, and Arsenic Speciation for Individual
Largescale Sucker Samples from FSCA 1

Upper Columbia River RI/FS

Analyte	Units	LS1W10089	LS1EW10089	Associated	LS1G50769	LS1W50769	Associated	LS1G50770	LS1W50770	Associated	LS1G50771	LS1W50771	Associated	LS1G50775	LS1W50775		
		Primary Sample	Primary Sample	with Gut/Contents	Primary Sample												
TAL Metals																	
Aluminum	mg/Kg WW	8.19 J	400.597	98.1%	213.024	3.654 U	19.536	82.7%	449.8	5.1	38.659	87.8%	246.264	4.512	27.104		
Antimony	mg/Kg WW	0.11466 U	0.240	55.1%	0.19824	0.09657 U	0.104	14.4%	0.17646	0.09945 U	0.105	12.7%	0.12247	0.10998 U	0.111		
Arsenic	mg/Kg WW	0.14469	0.438	68.9%	0.6048	0.10179	0.140	32.8%	0.7266	0.1785	0.220	24.9%	0.80764	0.18048	0.239		
Barium	mg/Kg WW	2.21676	38.810	94.6%	14.9856	1.07793 J	2.133	53.3%	16.9194	2.31285 J	3.415	37.4%	9.3673	1.2408 J	2.000		
Beryllium	mg/Kg WW	0.00573 U	0.022	75.7%	0.01008	0.0047 U	0.005	15.0%	0.0263	0.0051 U	0.007	29.6%	0.01258	0.00564 U	0.006		
Cadmium	mg/Kg WW	0.3822	0.513	30.0%	1.38432	0.2871	0.370	28.4%	1.6781	0.255	0.362	34.9%	1.0261	0.2538	0.326		
Calcium	mg/Kg WW	8244.6	9023.525	14.2%	17841.6	7725.6 J	8492.952	15.9%	8926.8	8109 J	8170.714	8.2%	18767.7	10462.2 J	11238.357		
Chromium	mg/Kg WW	0.546 J	6.663	92.3%	3.18864 J	0.4698	0.676	35.8%	8.5462 J	0.67575	1.270	50.8%	3.4755 J	0.5922	0.862		
Cobalt	mg/Kg WW	0.03549	1.178	97.2%	0.4368	0.0261	0.057	57.9%	0.4498	0.03315	0.065	52.6%	0.3641	0.05358	0.083		
Copper	mg/Kg WW	1.00464 J	48.491	98.1%	24.7296 U	0.60813	2.438	76.9%	14.2206	0.5865	1.615	66.4%	13.9351 U	0.81216	2.039		
Iron	mg/Kg WW	61.698	4100.877	98.6%	833.28	13.7025 J	75.872	83.3%	1211	23.307 J	112.934	80.9%	728.2	21.8268 J	87.838		
Lead	mg/Kg WW	7.7805 J	14.370	49.1%	2.37552	3.1842	3.123	5.8%	4.9478	6.7575	6.621	5.6%	2.05551	4.1172	3.925		
Magnesium	mg/Kg WW	327.6	429.897	28.4%	362.88	305.37	309.732	8.9%	536.3	318.75	335.167	12.1%	417.06	346.86	353.420		
Manganese	mg/Kg WW	10.4013	85.220	88.5%	26.1072	4.4892 J	6.129	32.3%	28.3374	10.863 J	12.182	17.6%	21.7467	5.3862 J	6.915		
Nickel	mg/Kg WW	0.25389	2.599	90.8%	1.80432	0.24012	0.359	38.1%	4.7056	0.306	0.638	55.7%	1.96283	0.3384	0.490		
Potassium	mg/Kg WW	3767.4	3715.703	4.8%	2120.16	3366.9	3272.328	4.9%	2338.96	3595.5	3500.677	5.0%	1916.49	2961	2863.390		
Selenium	mg/Kg WW	0.5187	0.578	15.7%	1.17936	0.4959	0.548	16.3%	1.4532	0.5865	0.652	16.8%	1.20484	0.6768	0.726		
Silver	mg/Kg WW	0.07098 U	0.166	59.9%	0.08064	0.06003 U	0.062	9.9%	0.07958	0.06375 U	0.065	9.2%	0.07613	0.06768 U	0.068		
Sodium	mg/Kg WW	1198.47	1238.332	9.1%	1609.44	986.58	1033.827	11.8%	1415.14	1060.8	1087.540	9.8%	1555.7	1221.06	1252.332		
Thallium	mg/Kg WW	0.07098 U	0.074	9.3%	0.08064	0.06003 U	0.062	9.9%	0.07958	0.06375 U	0.065	9.2%	0.07613	0.06768 U	0.068		
Uranium	mg/Kg WW	0.01111	0.098	89.3%	0.1008	0.00775	0.015	51.6%	0.11037	0.01048	0.018	46.2%	0.14101	0.01052	0.023		
Vanadium	mg/Kg WW	0.11466 U	0.802	86.6%	0.7728	0.09657 U	0.148	39.6%	1.46704	0.09945 U	0.203	54.6%	1.06582	0.10998 U	0.199		
Zinc	mg/Kg WW	49.14 J	359.347	87.2%	58.128	22.9419	25.611	17.2%	59.512	39.78	41.269	10.9%	39.389	21.09	22.727		
Mercury																	
Mercury	ug/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Arsenic Species																	
Arsenic (As ⁺³ + As ⁻⁵)	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ASB + Cation	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Monomethylarsonic acid (MMA)	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Unknown	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Conventional																	
Lipids	%	5.9	NC	NC	11	4.5	NC	NC	-	4.8	NC	NC	11	5.3	NC	NC	0.3 U
Moisture	%	72.7	NC	NC	66.4	73.9	NC	NC	65.4	74.5	NC	NC	66.9	71.8	NC	NC	80.8

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Estimated Whole Body Results of TAL Metals,
Mercury, and Arsenic Speciation for Individual
Largescale Sucker Samples from FSCA 1

Upper Columbia River RI/FS

Analyte	Units	LS1EW50775 Primary Sample	Associated with Gut/ Contents	LS1G50778 Primary Sample	LS1W50778 Primary Sample	LS1EW50778 Associated with Gut/ Contents	LS1G50778 Field Duplicate	LS1W50778 Field Duplicate	LS1EW50778 Associated with Gut/ Contents
TAL Metals									
Aluminum	mg/Kg WW	31.566	84.6%	294.468	3.96	32.355	89.0%	298.931	3.668 U
Antimony	mg/Kg WW	0.137	51.4%	0.12402	0.10296 U	0.105	11.5%	0.1268	0.09956 U
Arsenic	mg/Kg WW	0.158	40.6%	0.83634 U	0.19008	0.253	32.3%	0.8242 U	0.18864
Barium	mg/Kg WW	3.225	48.7%	17.4582	2.09352 J	3.595	47.5%	18.6396	1.68466 J
Beryllium	mg/Kg WW	0.004	27.1%	0.01495	0.00502 U	0.006	24.4%	0.01553	0.00498 U
Cadmium	mg/Kg WW	0.452	28.4%	1.34514	0.23232	0.341	38.5%	1.31872	0.25152
Calcium	mg/Kg WW	10563.567	16.5%	13769.4	11484 J	11707.378	11.5%	14391.8	8305.4 J
Chromium	mg/Kg WW	0.598	48.8%	3.4026 J	0.5808	0.857	38.8%	3.2651 J	0.63404
Cobalt	mg/Kg WW	0.074	49.0%	0.3498	0.03696	0.068	50.6%	0.317	0.03668
Copper	mg/Kg WW	2.316	70.3%	7.4094 U	0.6864	1.344	53.9%	7.3544 U	0.7074
Iron	mg/Kg WW	128.745	68.0%	655.08	15.9192 J	78.392	81.7%	675.21	14.9078 J
Lead	mg/Kg WW	7.624	4.0%	2.2419	3.9336	3.768	5.8%	2.09537	3.0392
Magnesium	mg/Kg WW	336.089	11.1%	422.94	335.28	343.848	12.0%	421.61	306.54
Manganese	mg/Kg WW	11.985	22.8%	16.5996	5.7288 J	6.791	23.9%	16.8644	4.454 J
Nickel	mg/Kg WW	0.412	34.6%	1.7967	0.3432	0.485	36.2%	1.81324	0.3144
Potassium	mg/Kg WW	3357.189	4.6%	2117.88	2851.2	2779.524	7.4%	2060.5	3013
Selenium	mg/Kg WW	0.507	13.0%	1.4946	0.68112	0.761	19.2%	1.4582	0.71788
Silver	mg/Kg WW	0.050	16.6%	0.0795	0.06336 U	0.065	12.0%	0.07925	0.06026 U
Sodium	mg/Kg WW	1308.221	8.4%	1669.5	1248.72	1289.848	12.7%	1629.38	1215.68
Thallium	mg/Kg WW	0.046	9.1%	0.0795	0.06336 U	0.065	12.0%	0.07925	0.06026 U
Uranium	mg/Kg WW	0.033	31.0%	0.11225	0.01172	0.022	50.9%	0.11761	0.00943
Vanadium	mg/Kg WW	0.188	48.4%	1.12254	0.10296 U	0.203	54.2%	1.16339	0.10218
Zinc	mg/Kg WW	31.850	14.7%	31.2276	20.9616	21.965	13.9%	32.017	21.1958
Mercury									
Mercury	ug/Kg WW	-	-	-	-	-	-	-	-
Arsenic Species									
Arsenic (As ⁺³ + As ⁻⁵)	µg/Kg WW	-	-	215.922	10.824 U	30.87057629	68.4%	241.237	10.742 U
ASB + Cation	µg/Kg WW	-	-	21.942 J	39.072 J	37.39768893	5.7%	12.997 UJ	37.466 J
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	22.896 J	7.128 J	8.669187213	25.8%	23.775 J	7.598 J
Monomethylarsonic acid (MMA)	µg/Kg WW	-	-	29.892 J	10.824 U	12.687734	23.0%	29.164 J	10.742 U
Unknown	µg/Kg WW	-	-	89.04 J	13.2 J	20.61271171	42.2%	120.46 J	13.362 J
Conventional									
Lipids	%	NC	NC	9.4	4.2	NC	NC	-	4.5
Moisture	%	NC	NC	68.2	73.6	NC	NC	68.3	73.8

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TABLE D-2

Estimated Whole Body Results of TAL Metals,
Mercury, and Arsenic Speciation for Individual
Largescale Sucker Samples from FSCA 3

Upper Columbia River RI/FS

Analyte	Units	LS3G40486 Primary Sample	LS3W40486 Primary Sample	LS3EW40486 Primary Sample	Associated with Gut/Contents	LS3G40504 Primary Sample	LS3W40504 Primary Sample	Associated with Gut/Contents	LS3G40520 Primary Sample	LS3W40520 Primary Sample	Associated with Gut/Contents	LS3G40914 Primary Sample	LS3W40914 Primary Sample
TAL Metals													
Aluminum	mg/Kg WW	609	4.267 J	38.098	89.4%	346.02	3.615 J	23.091	85.2%	183.309	15.34 J	27.291	47.8%
Antimony	mg/Kg WW	0.116	0.09538 U	0.097	6.7%	0.0876	0.08917 U	0.089	5.6%	0.11739	0.1014 U	0.103	8.1%
Arsenic	mg/Kg WW	0.667	0.19327	0.220	17.0%	0.3942	0.21208	0.222	10.1%	0.6321 U	0.2132	0.243	18.5%
Barium	mg/Kg WW	10.092	4.0913	4.427	12.8%	14.7387	2.18288	2.902	28.9%	5.4782	1.4898 J	1.774	22.0%
Beryllium	mg/Kg WW	0.0232	0.00477 U	0.006	22.4%	0.01336	0.00458 U	0.005	15.0%	0.00752	0.0052 U	0.005	10.0%
Cadmium	mg/Kg WW	1.0759	0.2008	0.250	24.1%	1.21764	0.2651	0.319	21.7%	0.89096	0.1144	0.170	37.4%
Calcium	mg/Kg WW	3074	10968.7	10527.043	1.6%	8322	10604	10474.199	4.5%	10926.3	12428 J	12321.153	6.3%
Chromium	mg/Kg WW	45.53 J	0.502 J	3.021	84.3%	4.7085	0.4338 J	0.677	39.6%	3.4615 J	0.364	0.584	42.1%
Cobalt	mg/Kg WW	0.8613	0.0502	0.090	47.3%	0.2409	0.02651	0.039	35.4%	0.17157	0.0286	0.039	31.5%
Copper	mg/Kg WW	12.673 U	0.502 J	1.183	59.9%	7.5117 U	0.6507 J	1.041	41.0%	6.923 U	0.494	0.951	51.8%
Iron	mg/Kg WW	1081.7	11.295	71.177	85.0%	676.71	25.546	62.585	61.5%	304.01	11.18	32.015	67.6%
Lead	mg/Kg WW	0.7946	0.71284 J	0.717	6.2%	1.94034	4.338 J	4.202	2.6%	1.36353	2.0046 J	1.959	5.0%
Magnesium	mg/Kg WW	504.6	333.83	343.383	8.2%	348.21	361.5	360.744	5.5%	295.281	384.8	378.431	5.6%
Manganese	mg/Kg WW	46.69	4.5431	6.901	37.8%	22.338	5.8081	6.748	18.8%	18.963	6.76 J	7.628	17.7%
Nickel	mg/Kg WW	30.16	0.3765	2.043	82.6%	2.6499	0.3615	0.492	30.7%	2.06185	0.338	0.461	31.8%
Potassium	mg/Kg WW	2665.1	3388.5	3348.030	4.5%	2628	3735.5	3672.505	4.1%	2221.38	3458	3370.014	4.7%
Selenium	mg/Kg WW	1.0614	0.5773	0.604	9.8%	0.94389	0.76879	0.779	6.9%	0.82775	0.494	0.518	11.4%
Silver	mg/Kg WW	0.0725	0.06024 U	0.061	6.7%	0.05475	0.05543 U	0.055	5.6%	0.07525	0.0624 U	0.063	8.5%
Sodium	mg/Kg WW	1374.6	1229.9	1237.995	6.2%	1752	1368.88	1390.672	7.2%	1387.61	1084.2	1105.788	8.9%
Thallium	mg/Kg WW	0.0725	0.06024 U	0.061	6.7%	0.05475	0.05543 U	0.055	5.6%	0.07525	0.0624 U	0.063	8.5%
Uranium	mg/Kg WW	0.05771	0.0191	0.021	15.2%	0.12308	0.01911	0.025	28.0%	0.04997	0.02392	0.026	13.8%
Vanadium	mg/Kg WW	2.059	0.12048	0.229	50.3%	1.09719	0.11809	0.174	35.9%	0.5117	0.1014 U	0.131	27.9%
Zinc	mg/Kg WW	27.753	21.7868 J	22.121	7.0%	25.842	24.0759 J	24.176	6.1%	25.886	23.218	23.408	7.9%
Mercury													
Mercury	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic Species													
Arsenic (As ³⁺ + As ⁵⁺)	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-
ASB + Cation	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-
Monomethylarsonic acid (MMA)	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-
Unknown	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-
Conventional													
Lipids	%	-	4.3	NC	NC	-	1.8	NC	NC	-	4.3	NC	NC
Moisture	%	71	74.9	NC	NC	78.1	75.9	NC	NC	69.9	74	NC	45.4
													5.4
													73.7

^a G indicates a gut/contents sample from an individual largescale sucker.

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TABLE D-2

Estimated Whole Body Results of TAL Metals,
Mercury, and Arsenic Speciation for Individual
Largescale Sucker Samples from FSCA 3

Upper Columbia River RI/FS

Analyte	Units	LS3EW40914	Associated with Gut/ Contents	LS3G40915	LS3W40915	LS3EW40915	%
		Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Associated with Gut/
TAL Metals							
Aluminum	mg/Kg WW	30.600	82.6%	65.326	4.539 J	8.324	48.9%
Antimony	mg/Kg WW	0.112	13.7%	0.1468	0.10146 U	0.104	8.8%
Arsenic	mg/Kg WW	0.148	26.2%	0.26057	0.14151	0.149	10.9%
Barium	mg/Kg WW	1.221	27.1%	1.31019	2.2962 J	2.235	3.7%
Beryllium	mg/Kg WW	0.006	16.2%	0.00734	0.00507 U	0.005	8.8%
Cadmium	mg/Kg WW	0.043	37.8%	0.4404	0.10413	0.125	21.9%
Calcium	mg/Kg WW	8809.448	0.4%	513.8	10626.6 J	9996.930	0.3%
Chromium	mg/Kg WW	2.301	80.0%	1.9084 J	0.3738	0.469	25.3%
Cobalt	mg/Kg WW	0.045	66.8%	0.06239	0.03471	0.036	10.7%
Copper	mg/Kg WW	0.828	56.1%	5.6885 U	0.4539	0.780	45.4%
Iron	mg/Kg WW	57.117	84.3%	146.433	15.6462	23.790	38.3%
Lead	mg/Kg WW	0.160	31.9%	0.28626	1.74351 J	1.653	1.1%
Magnesium	mg/Kg WW	379.317	5.4%	145.699	373.8	359.597	2.5%
Manganese	mg/Kg WW	2.870	36.4%	3.09381	5.9007 J	5.726	3.4%
Nickel	mg/Kg WW	1.679	81.2%	0.6973	0.3204	0.344	12.6%
Potassium	mg/Kg WW	3396.572	3.6%	2286.41	3497.7	3422.280	4.2%
Selenium	mg/Kg WW	0.452	14.1%	0.93585	0.5607	0.584	10.0%
Silver	mg/Kg WW	0.070	13.9%	0.09175	0.06141 U	0.063	9.0%
Sodium	mg/Kg WW	846.065	8.9%	1247.8	1038.63	1051.654	7.4%
Thallium	mg/Kg WW	0.070	13.9%	0.09175	0.06141 U	0.063	9.0%
Uranium	mg/Kg WW	0.004	41.7%	0.00973	0.02248	0.022	2.8%
Vanadium	mg/Kg WW	0.191	49.1%	0.24956	0.10146 U	0.111	14.0%
Zinc	mg/Kg WW	13.444	9.1%	17.249	23.9499	23.533	4.6%
Mercury							
Mercury	µg/Kg WW	-	-	-	-	-	-
Arsenic Species							
Arsenic (As ³⁺ + As ⁵⁺)	µg/Kg WW	-	-	15.047 J	10.947 U	11.2022849	8.4%
ASB + Cation	µg/Kg WW	-	-	11.377 J	2.136 J	2.711387255	26.1%
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	16.882 J	4.806 J	5.557907423	18.9%
Monomethylarsionic acid (MMA)	µg/Kg WW	-	-	15.047 U	10.947 U	11.2022849	8.4%
Unknown	µg/Kg WW	-	-	13.212 J	10.68 J	10.83765399	7.6%
Conventionals							
Lipids	%	NC	NC	-	5.1	NC	NC
Moisture	%	NC	NC	63.3	73.3	NC	NC

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TABLE D-4

Estimated Whole Body Results of TAL Metals, Mercury, and Arsenic Speciation for Individual Largescale Sucker Samples from FSCA 6
Upper Columbia River RI/FS

Analyte	Units	LS6G50727	LS6W50727	LS6EW50727	Associated	LS6G50732	LS6W50732	LS6EW50732	Associated	LS6G50734	LS6W50734	LS6EW50734	Associated	LS6G50744	LS6W50744	LS6EW50744	Associated	LS6G5074
		Primary Sample	Primary Sample	Primary Sample	with Gut/Contents	Primary Sample	Primary Sample	Primary Sample	with Gut/Contents	Primary Sample	Primary Sample	with Gut/Contents	Primary Sample	Primary Sample	Primary Sample	with Gut/Contents	Primary Sample	
TAL Metals																		
Aluminum	mg/Kg WW	56.115	4.8 U	7.986	43.6%	29.3514	3.71 U	4.982	29.2%	1253.16	13.6404	112.553	88.8%	117.072	3.8624 U	13.288	73.4%	149.941
Antimony	mg/Kg WW	0.10179	0.1248 U	0.123	5.1%	0.11766	0.1007 U	0.102	5.7%	0.2124	0.11988 U	0.127	13.3%	0.10569	0.10336 U	0.104	8.5%	0.12046
Arsenic	mg/Kg WW	0.4698	0.2144	0.230	12.7%	0.24804	0.19875	0.201	6.1%	1.60893	0.081	0.203	63.3%	0.3794	0.13872	0.159	19.9%	0.3487
Barium	mg/Kg WW	2.8188	1.9776 J	2.030	8.6%	0.4452	1.68275 J	1.621	1.4%	17.3106	2.55312 J	3.731	37.0%	3.5501	3.264 J	3.288	9.0%	3.6455
Beryllium	mg/Kg WW	0.00496	0.00608 U	0.006	5.1%	0.00604	0.00504 U	0.005	5.9%	0.04567	0.00616 U	0.009	39.1%	0.0065	0.00517 U	0.005	10.2%	0.00602
Cadmium	mg/Kg WW	1.9836	0.3008	0.405	30.4%	0.96672	0.14575	0.186	25.7%	0.6903	0.23976	0.276	20.0%	0.78048	0.16592	0.217	29.9%	0.10757
Calcium	mg/Kg WW	2563.02	7840 J	7512.335	2.1%	167.268	11660 J	11089.918	0.1%	2208.96	7938 J	7480.826	2.4%	1704.59	12566.4 J	11662.028	1.2%	735.44
Chromium	mg/Kg WW	1.25541	0.8128	0.840	9.3%	2.0022	0.76055	0.822	12.1%	22.302	0.5508	2.287	77.8%	6.7479	0.4624	0.986	57.0%	5.5792
Cobalt	mg/Kg WW	0.10179	0.0352	0.039	16.1%	0.0636	0.02306	0.025	12.6%	0.7965	0.04536	0.105	60.4%	0.14634	0.04624	0.055	22.3%	0.1585
Copper	mg/Kg WW	3.8628	0.608	0.810	29.6%	7.3776 U	0.371	0.719	50.9%	4.17897	0.5508	0.840	39.7%	2.6558	0.544	0.720	30.7%	5.8962
Iron	mg/Kg WW	95.526	10.88 J	16.136	36.8%	102.078	10.07 J	14.634	34.6%	2086.83	28.2204 J	192.496	86.5%	258.534	114.424 J	31.999	67.3%	351.87
Lead	mg/Kg WW	0.13572	0.352	0.339	2.5%	0.06996	0.2915	0.281	1.2%	1.062	0.4536	0.502	16.9%	0.16531	0.5168	0.488	2.8%	0.19654
Magnesium	mg/Kg WW	173.304	289.28	282.079	3.8%	129.426	307.4	298.572	2.2%	908.01	293.22	342.280	21.2%	173.982	318.24	306.229	4.7%	213.975
Manganese	mg/Kg WW	10.6488	2.3744 J	2.888	22.9%	1.72356	2.6182 J	2.574	3.3%	47.5776	6.156 J	9.461	40.1%	11.653	4.5968 J	5.184	18.7%	8.8443
Nickel	mg/Kg WW	0.4698	0.2112	0.227	12.8%	0.6996	0.2491	0.271	12.8%	11.2041	0.4212	1.282	69.8%	3.8482	0.2992	0.595	53.9%	3.05588
Potassium	mg/Kg WW	2056.68	2921.6	2867.894	4.5%	2318.22	3206.5	3162.438	3.6%	1784.16	3074.76	2971.771	4.8%	1861.77	2711.84	2641.062	5.9%	2149.26
Selenium	mg/Kg WW	0.93177	0.608	0.628	9.2%	0.94764	0.477	0.500	9.4%	0.9027	0.3888	0.430	16.8%	0.8672	0.544	0.571	12.6%	1.17607
Silver	mg/Kg WW	0.06264	0.0768 U	0.076	5.1%	0.07314	0.0636 U	0.064	5.7%	0.13275	0.07452 U	0.079	13.4%	0.06504	0.06528 U	0.065	8.3%	0.07608
Sodium	mg/Kg WW	1652.13	1072	1108.022	9.3%	1682.22	1179.25	1204.199	6.9%	945.18	1014.12	1008.619	7.5%	1674.78	1487.84	1503.405	9.3%	1451.86
Thallium	mg/Kg WW	0.06264	0.0768 U	0.076	5.1%	0.07314	0.0636 U	0.064	5.7%	0.13275	0.07452 U	0.079	13.4%	0.06504	0.06528 U	0.065	8.3%	0.07608
Uranium	mg/Kg WW	0.01028	0.0113	0.011	5.7%	0.00588	0.00684	0.007	4.3%	0.0977	0.01445	0.021	37.0%	0.0164	0.0102	0.011	12.7%	0.01934
Vanadium	mg/Kg WW	0.14877	0.1248 U	0.126	7.3%	0.13038	0.1007 U	0.102	6.3%	3.06387	0.11988 U	0.355	68.9%	0.3523	0.10336 U	0.124	23.6%	0.4438
Zinc	mg/Kg WW	15.4512	17.888	17.737	5.4%	16.8222	18.8415	18.741	4.5%	20.5497	17.2044	17.471	9.4%	12.6015	18.0064	17.556	6.0%	17.0229
Mercury																		
Mercury	µg/Kg WW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic Species																		
Arsenic (As³⁺ + As⁵⁺)	µg/Kg WW	-	-	-	-	13.038 U	10.865 UJ	10.973	5.9%	-	-	-	-	-	-	-	-	-
ASB + Cation	µg/Kg WW	-	-	-	-	3.498 J	3.71 J	3.699	4.7%	-	-	-	-	-	-	-	-	-
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	-	-	15.264 J	7.95 J	8.313	9.1%	-	-	-	-	-	-	-	-	-
Monomethylarsonic acid (MMA)	µg/Kg WW	-	-	-	-	13.038 U	10.865 UJ	10.973	5.9%	-	-	-	-	-	-	-	-	-
Unknown	µg/Kg WW	-	-	-	-	25.44 J	24.645 J	24.684	5.1%	-	-	-	-	-	-	-	-	-
Conventional																		
Lipids	%	-	12	NC	NC	-	6.2	NC	NC	-	13	NC	NC	-	6.9	NC	NC	-
Moisture	%	73.9	68	NC	NC	68.2	73.5	NC	NC	46.9	67.6	NC	NC	72.9	72.8	NC	NC	68.3

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TABLE D-3
Estimated Whole Body Results of TAL Metals,
Mercury, and Arsenic Speciation for Individual
Largescale Sucker Samples from FSCA 6
Upper Columbia River RI/FS

	#	LS6W50747	LS6EW50747	Associated with Gut/ Contents	LS6G50734	LS6W50734	LS6EW50734	Associated with Gut/ Contents
Analyte	Units	Primary Sample	Primary Sample	Field Duplicate	Field Duplicate	Field Duplicate	Field Duplicate	
TAL Metals								
Aluminum	mg/Kg WW	3.9712 U	11.051	65.8%	1102.1	13.8996	100.737	87.3%
Antimony	mg/Kg WW	0.10608 U	0.107	5.5%	0.214	0.12636 U	0.133	12.8%
Arsenic	mg/Kg WW	0.1496	0.159	10.6%	1.6585	0.21384	0.329	40.2%
Barium	mg/Kg WW	2.63296 J	2.682	6.6%	16.3175	2.48832 J	3.592	36.3%
Beryllium	mg/Kg WW	0.00517 U	0.005	5.6%	0.04601	0.00648 U	0.010	38.1%
Cadmium	mg/Kg WW	0.1496	0.192	25.7%	0.6955	0.4212	0.443	12.5%
Calcium	mg/Kg WW	10308.8 J	9844.473	0.4%	2295.15	7516.8 J	7100.115	2.6%
Chromium	mg/Kg WW	0.952	1.176	23.0%	19.0995	2.34576	3.683	41.4%
Cobalt	mg/Kg WW	0.02666	0.033	23.3%	0.8025	0.09396	0.151	42.6%
Copper	mg/Kg WW	0.3536	0.622	45.9%	4.2051	1.33164	1.561	21.5%
Iron	mg/Kg WW	11.696 J	28.195	60.5%	1979.5	28.4148 J	184.110	85.8%
Lead	mg/Kg WW	0.272	0.268	3.6%	1.0165	0.5832	0.618	13.1%
Magnesium	mg/Kg WW	340	333.888	3.1%	866.7	289.008	335.107	20.6%
Manganese	mg/Kg WW	2.448 J	2.758	15.6%	46.224	8.91 J	11.888	31.0%
Nickel	mg/Kg WW	0.2176	0.355	41.7%	9.3625	0.83268	1.513	49.4%
Potassium	mg/Kg WW	3400	3339.337	3.1%	1728.05	2964.6	2865.924	4.8%
Selenium	mg/Kg WW	0.2992	0.342	16.7%	0.963	0.486	0.524	14.7%
Silver	mg/Kg WW	0.06528 U	0.066	5.6%	0.13375	0.07776 U	0.082	13.0%
Sodium	mg/Kg WW	1292	1299.754	5.4%	941.6	955.8	954.667	7.9%
Thallium	mg/Kg WW	0.06528 U	0.066	5.6%	0.13375	0.07776 U	0.082	13.0%
Uranium	mg/Kg WW	0.00664	0.007	12.9%	0.09469	0.01584	0.022	34.1%
Vanadium	mg/Kg WW	0.10608 U	0.122	17.6%	2.84085	0.22032	0.429	52.8%
Zinc	mg/Kg WW	18.1968	18.140	4.6%	21.293	17.334	17.650	9.6%
Mercury								
Mercury	µg/Kg WW	-	-	-	-	-	-	-
Arsenic Species								
Arsenic (As ³⁺ + As ⁵⁺)	µg/Kg WW	-	-	-	-	-	-	-
ASB + Cation	µg/Kg WW	-	-	-	-	-	-	-
Dimethylarsionic acid (DMA)	µg/Kg WW	-	-	-	-	-	-	-
Monomethylarsonic acid (MMA)	µg/Kg WW	-	-	-	-	-	-	-
Unknown	µg/Kg WW	-	-	-	-	-	-	-
Conventional								
Lipids	%	5.9	NC	NC	-	13	NC	NC
Moisture	%	72.8	NC	NC	46.5	67.6	NC	NC

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